

100  
FIGURE 1

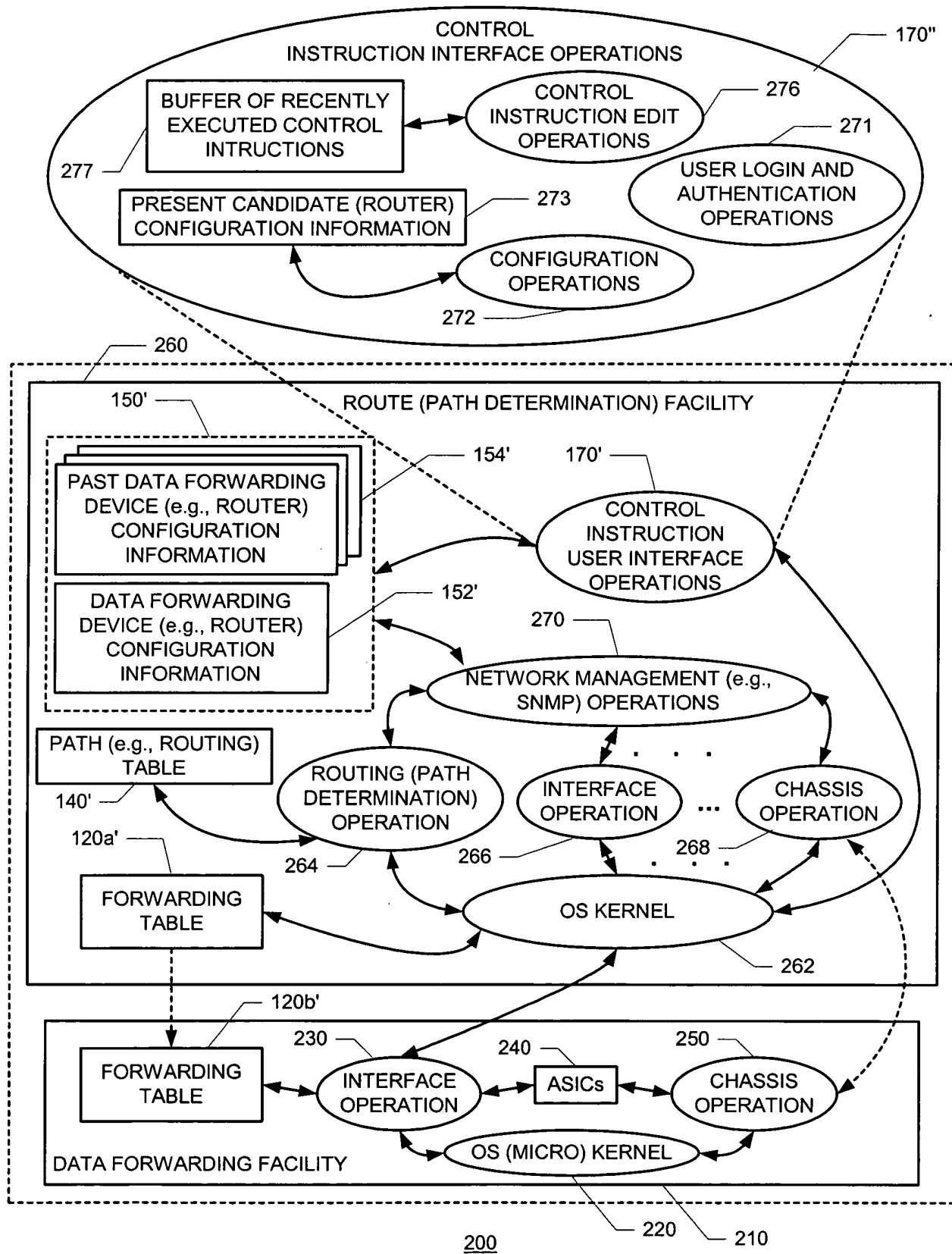


FIGURE 2

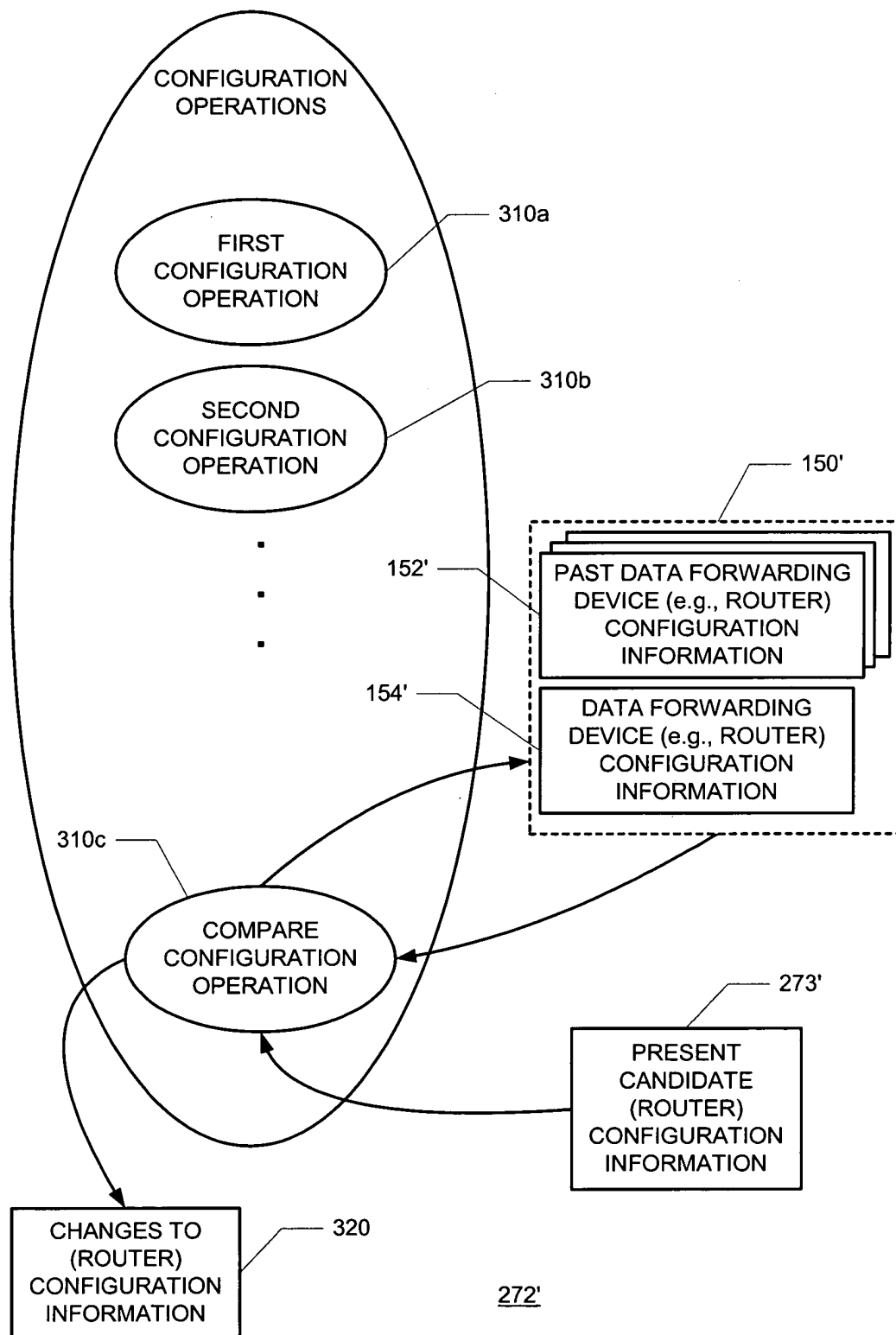


FIGURE 3

```

graph TD
    272([CONFIGURATION OPERATIONS METHOD 272]) --> 410{DOES USER HAVE PROPER PERMISSION? 410}
    410 -- NO --> 415[DENY ACCESS; LOG DENIAL 415]
    410 -- YES --> 420[OPEN EMPTY SET OF CANDIDATE CONFIGURATION INFORMATION 420]
    420 --> 430[PERMIT USER WITH APPROPRIATE PERMISSIONS TO LOAD PRE-EXISTING CONFIGURATION INFORMATION, VIEW AND NAVIGATE THROUGH THE CANDIDATE CONFIGURATION, TO CHANGE, ADD, AND TEST STATEMENTS AND PARAMETERS, TO COMPARE SETS OF CONFIGURATION INFORMATION, AND TO CHANGE AND ADD COMMENTS 430]
    430 --> 440{SAVE? 440}
    440 -- NO --> 430
    440 -- YES --> 450{COMMIT? 450}
    450 -- NO --> 430
    450 -- YES --> 460[CHECK FOR PROPER SYNTAX 460]
    460 --> 470{ANY ERRORS? 470}
    470 -- YES --> 475[NOTIFY USER OF ERROR(S) 475]
    475 --> 430
    470 -- NO --> 480[ACTIVATE CANDIDATE CONFIGURATION AND MARK AS CURRENT, ACTIVE CONFIGURATION 480]
    415 --> 490([RETURN 490])
    480 --> 490
  
```

FIGURE 4

FIGURE 4

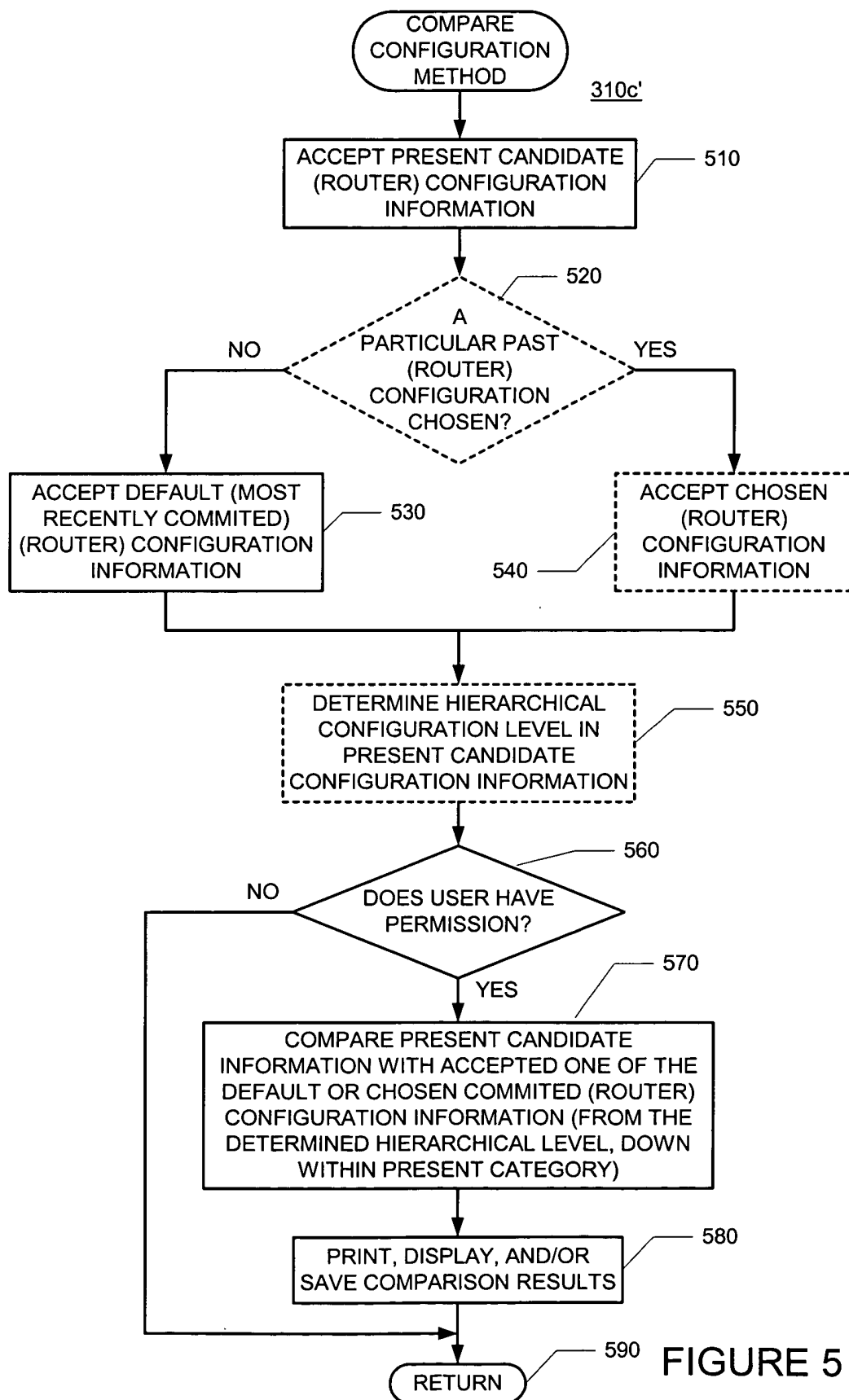


FIGURE 5

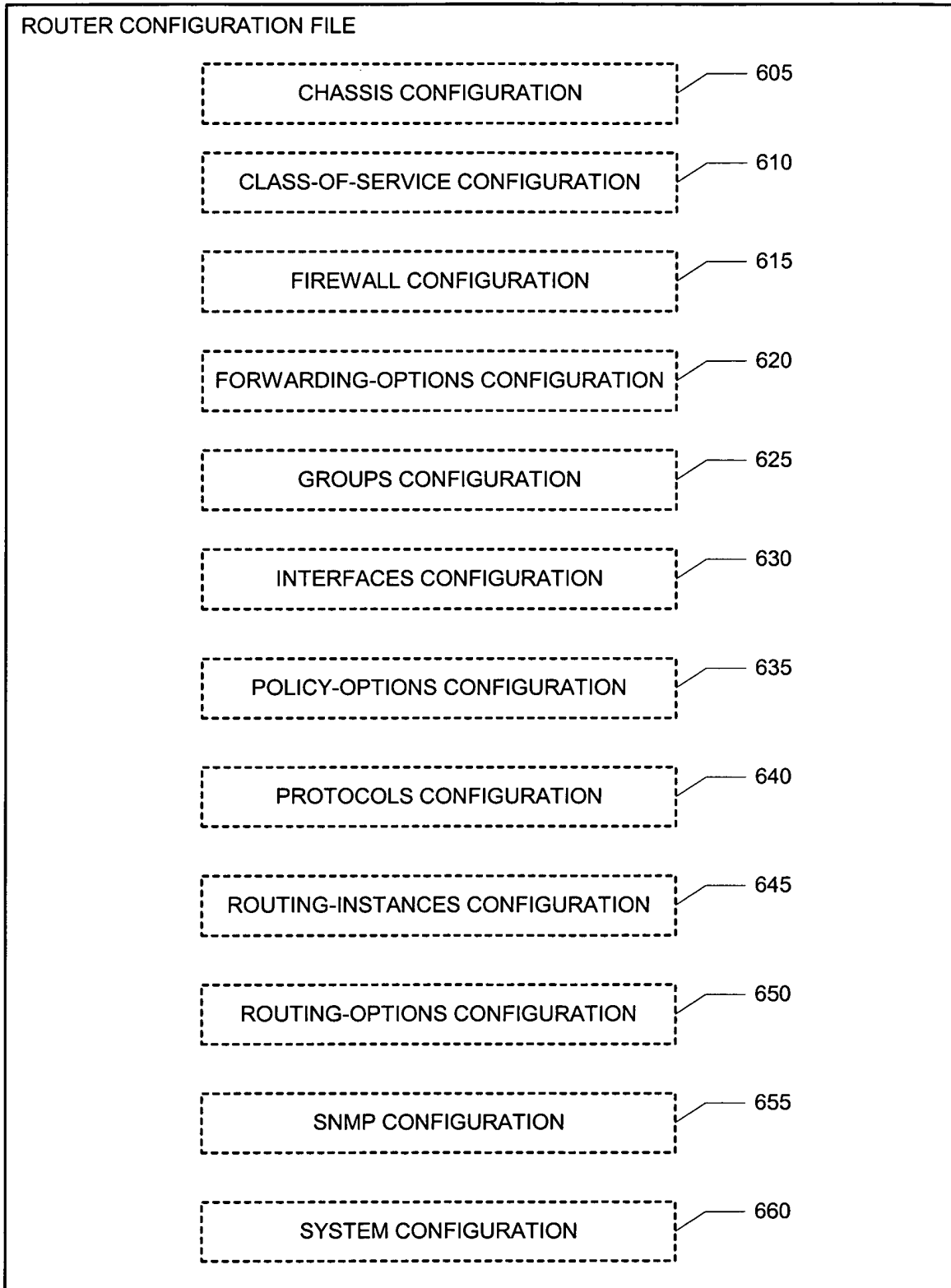


FIGURE 6

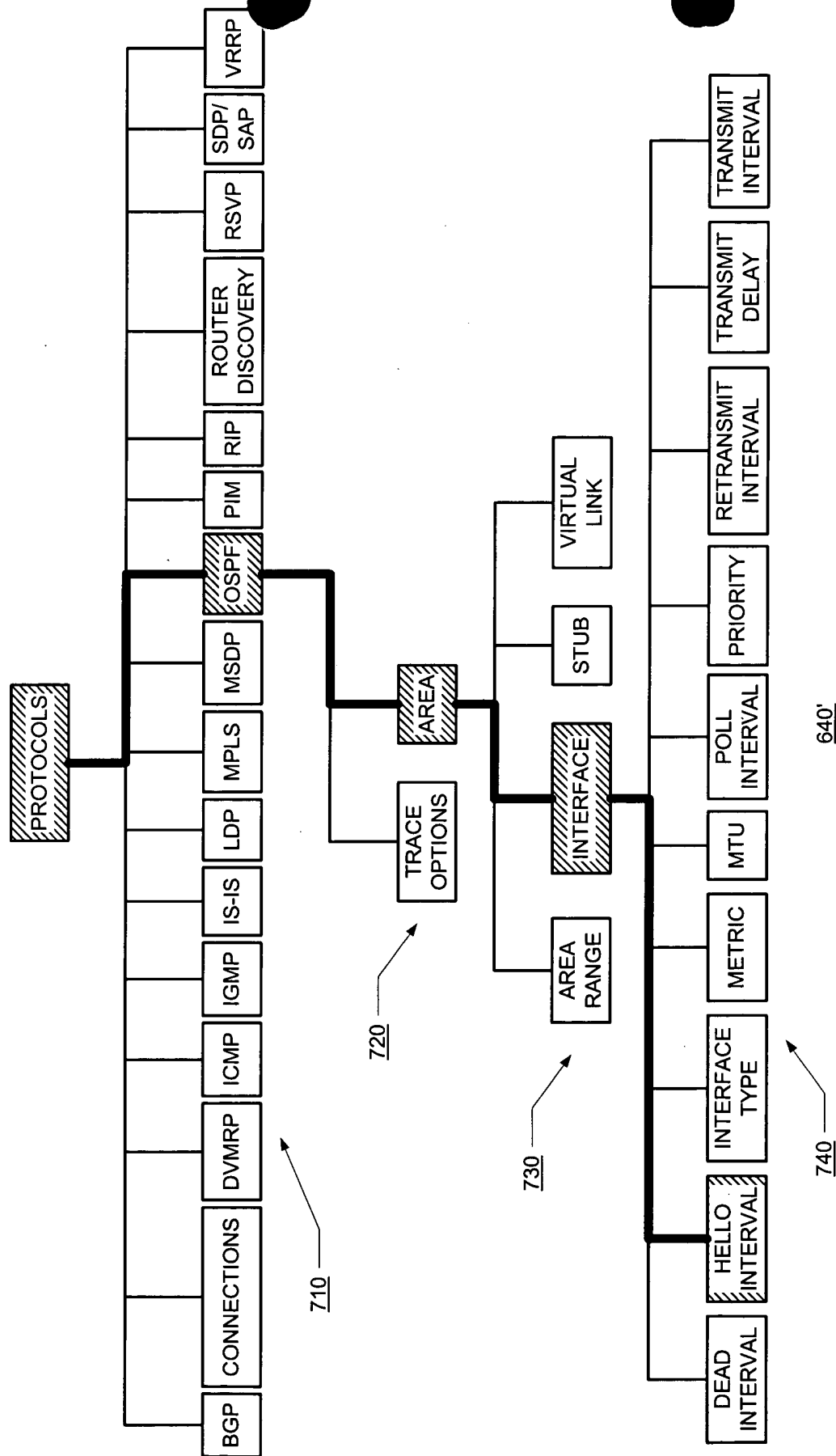


FIGURE 7

**[edit chassis] Hierarchy Level**

```

chassis {
  alarm {
    interface-type {
      alarm-name (red | yellow | ignore);
    }
  }
  filter-check days;
  fpc slot-number {
    pic pic-number {
      framing (sdh | sonet);
      no-concatenate;
    }
  }
  (no-source-route | source-route);
  redundancy {
    routing-engine slot-number (master | backup | disabled );
    ssb slot-number (always | preferred);
  }
} # End of [edit chassis] hierarchy level

```

**FIGURE 8**



# **[edit class-of-service] Hierarchy Level**

```

class-of-service {
  input {
    fpc fpc-number {
      precedence-map map-name;
    }
  }
  interfaces {
    interface-name {
      inet-precedence-map;
      mpls-cos-map;
      unit unit-number {
        output-queue queue-number;
      }
    }
  }
  precedence-map map-name {
    bits precedence-bit output-queue queue-number;
  }
}
output {
  drop-profile profile-name {
    stream-profile {
      fill-level fill-percentage drop-probability probability-percentage;
    }
    plp-set-queue-profile {
      fill-level fill-percentage drop-probability probability-percentage;
    }
    plp-clear-queue-profile {
      fill-level fill-percentage drop-probability probability-percentage;
    }
  }
  fpc fpc-number {
    drop-profile profile-name;
  }
  interfaces {
    interface-name {
      transmit-queues {
        output-queue queue-number bandwidth percentage;
      }
      weighted-round-robin {
        output-queue queue-number weight percentage;
      }
      unit unit-number {
        precedence-rewrite {
          output-queue queue-number {
            plp-clear rewrite-bits precedence-bit;
            plp-set rewrite-bits precedence-bit;
          }
        }
      }
    }
  }
}
policy {
  class class-name {
    classification-override {
      output-queue queue-number;
    }
  }
}
} # End of [edit class-of-service] hierarchy level

```

**FIGURE 9**

***[edit firewall] Hierarchy Level***

```

firewall {
  filter filter-name {
    term term-name {
      from {
        match-conditions;
      }
      then {
        action;
        action-modifiers;
      }
    }
  }
} # End of [edit firewall] hierarchy level

```

FIGURE 10

***[edit forwarding-options] Hierarchy Level***

```

forwarding-options {
  sampling {
    disable;
    input {
      family inet {
        rate number;
        run-length number;
      }
    }
    output {
      cflowd hostname {
        engine-id idnumber;
        (local-dump | no-local-dump);
        port portnumber;
        version format;
      }
      file {
        filename filename;
        files number;
        size bytes;
        (stamp | no-stamp);
        (world-readable | no-world-readable);
      }
    }
  }
  traceoptions {
    file filename {
      files number;
      size bytes;
      (world-readable | no-world-readable);
    }
  }
}
} #End of [edit forwarding-options] hierarchy level

```

**FIGURE 11**

***[edit groups] Hierarchy Level***

```
groups {  
  group-name {  
    configuration-data;  
  }  
} #End of [edit groups] hierarchy level
```

FIGURE 12

**[edit interfaces] Hierarchy Level**

```
interfaces {  
  traceoptions {  
    file filename <size size> <files number>;  
  }  
  interface-name {  
    disable;  
    atm-options {  
      vpi vpi-identifier max-vcs vcs-value;  
      ilmi;  
    }  
    clocking clock-source;  
    dce;  
    description text;  
    e1-options {  
      fcs (32 | 16);  
      framing (g704 | unframed);  
      idle-cycle-flag (flags | ones);  
      loopback (local | remote);  
      start-end-flag (shared | filler);  
      timeslots slot-number;  
    }  
    e3-options {  
      bert-algorithm algorithm;  
      bert-error-rate rate;  
      bert-period seconds;  
      compatibility-mode (digital-link | kentrox);  
      fcs (32 | 16);  
      idle-cycle-flag value;  
      loopback (local | remote);  
      (payload-scrambler | no-payload-scrambler);  
      start-end-flag value;  
    }  
    encapsulation type;  
    fastether-options {  
      (loopback | no-loopback);  
      source-address-filter {  
        mac-address;  
      }  
      (source-filtering | no-source-filtering);  
    }  
    gigether-options {  
      flow-control;  
      (loopback | no-loopback);  
      source-address-filter {  
        mac-address;  
      }  
      (source-filtering | no-source-filtering);  
    }  
    hold-time seconds;  
    link-mode mode;  
    mac mac-address;  
    mtu bytes;  
    no-keepalives;  
    no-traps;  
    receive-bucket {  
      overflow (tag | discard);  
      rate speed;  
      threshold number;  
    }  
  }  
}
```

**FIGURE 13a**



```

    threshold number;
}
vlan-tagging;
unit logical-unit-number {
    disable;
    dlc identifier;
    encapsulation type;
    inverse-arp;
    multicast-dlc dlc-identifier;
    multicast-vci vpi-identifier.vci-identifier;
    multipoint;
    no-traps;
    oam-liveness {
        up-count cells;
        down-count cells;
    }
    oam-period seconds;
    point-to-point;
    shaping {
        (cbr rate | vbr peak rate sustained rate burst length);
        queue-length number;
    }
}
tunnel {
    source address;
    destination address;
    ttl number;
}
vci vpi-identifier.vci-identifier;
vlan-id number;
family family {
    filter {
        input filter-name;
        output filter-name;
        group filter-group-number;
    }
    mtu size;
    multicasts-only;
    no-redirecst;
    primary;
    address address {
        arp ip-address mac mac-address <publish>;
        destination address;
        broadcast address;
        multipoint-destination destination-address (dlc dlc-identifier | vci vci-identifier);
        multipoint-destination destination-address {
            inverse-arp;
            oam-liveness {
                up-count cells;
                down-count cells;
            }
            oam-period seconds;
            shaping {
                (cbr rate | vbr peak rate sustained rate burst length);
                queue-length number;
            }
        }
        vci vpi-identifier.vci-identifier;
    }
    primary;
    preferred;
}

```

FIGURE 13c

```

vrp-group group-number {
  virtual-address [ addresses ];
  priority number;
  advertise-interval seconds;
  authentication-type authentication;
  authentication-key key;
  (preempt | no-preempt);
  track {
    interface interface-name priority-cost cost;
  }
}
}
}
}
} # End of [edit interfaces] hierarchy level

```

FIGURE 13d



**[edit policy-options] Hierarchy Level**

```

policy-options {
  as-path name regular-expression;
  community name members [ community-ids ];
  damping name {
    disable;
    half-life minutes;
    max-suppress minutes;
    reuse number;
    suppress number;
  }
  policy-statement policy-name {
    term term-name {
      from {
        match-conditions;
        route-filter destination-prefix match-type <actions>;
        prefix-list name;
      }
      to {
        match-conditions;
      }
      then actions;
    }
  }
  prefix-list name {
    ip-addresses;
  }
} # End of [edit policy-options] hierarchy level

```

**FIGURE 14**

**[edit protocols] Hierarchy Level**

```

protocols {
  BGP    bgp {
    advertise-inactive;
    authentication-key key;
    cluster cluster-identifier;
    damping;
    description text-description;
    disable;
    export [policy-name];
  }
}

```

**FIGURE 15a**

```

family inet {
    (any | unicast | multicast) {
        prefix-limit {
            maximum number;
            teardown <percentage>;
        }
    }
}

hold-time seconds;
import [policy-name];
keep (all | none);
local-address address;
local-as autonomous-system <private>;
local-preference local-preference;
log-updown;
metric-out metric;
multihop <ttl-value>;
no-aggregator-id;
no-client-reflect;
out-delay seconds;
passive;
path-selection (cisco-non-deterministic | always-compare-med);
peer-as autonomous-system;
preference preference;
remove-private;
traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
    <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
}

group group-name {
    advertise-inactive;
    allow [network/masklen];
    authentication-key key;
    cluster cluster-identifier;
    damping;
    description text-description;
    export [policy-name];
    family inet {
        (any | unicast | multicast) {
            prefix-limit {
                maximum number;
                teardown <percentage>;
            }
        }
    }
}

hold-time seconds;
import [policy-name];
keep (all | none);
local-address address;
local-as autonomous-system <private>;
local-preference local-preference;
log-updown;
metric-out metric;
multihop <ttl-value>;
multipath;
no-aggregator-id;
no-client-reflect;
out-delay seconds;
passive;
peer-as autonomous-system;

```

FIGURE 15b

```

        preference preference;
        protocol protocol;
        remove-private;
        traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
              <(world-readable | no-world-readable)>;
            flag flag <flag-modifier> <disable>;
        }
    type type;
    neighbor address {
        advertise-inactive;
        authentication-key key;
        cluster cluster-identifier;
        damping;
        description text-description;
        export [policy-name];
        family inet {
            (any | unicast | multicast) {
                prefix-limit {
                    maximum number;
                    teardown <percentage>;
                }
            }
        }
        hold-time seconds;
        import policy-name;
        keep (all | none);
        local-address address;
        local-as autonomous-system <private>;
        local-preference local-preference;
        log-updown;
        metric-out metric;
        multihop <tvl-value>;
        multipath;
        no-aggregator-id;
        no-client-reflect;
        out-delay seconds;
        passive;
        peer-as autonomous-system;
        preference preference;
        protocol protocol;
        traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
              <(world-readable | no-world-readable)>;
            flag flag <flag-modifier> <disable>;
        }
    }
} # End of [edit protocols bgp] hierarchy level

```

FIGURE 15c

```

lsp-lifetime seconds;
no-authentication-check;
overload <timeout seconds>;
reference-bandwidth reference-bandwidth;
traffic-engineering {
    disable;
    shortcuts;
}
traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
}
interface interface-name {
    disable;
    csnp-interval seconds;
    hello-authentication-key key;
    hello-authentication-type authentication;
    lsp-interval milliseconds;
    mesh-group (value | blocked);
    passive;
    level level-number {
        disable;
        hello-authentication-key key;
        hello-authentication-type authentication;
        hello-interval seconds;
        hold-time seconds;
        metric metric;
        passive;
        priority priority;
        te-metric metric;
    }
}
} # End of [edit protocols isis] hierarchy level

```

```

LDP ldp {
    interface interface-name {
        disable;
        hello-interval seconds;
        hold-time seconds;
    }
    keepalive-interval seconds;
    keepalive-timeout seconds;
    preference preference;
    traceoptions {
        file name <replace> <size size> <files number> <no-stamp>
            <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
    }
} # End of [edit protocols ldp] hierarchy level

```

```

MPLS mpls {
    disable;
    no-propagate-ttl;
    admin-groups {
        group-name group-value;
    }
    log-updown {
        (syslog | no-syslog);
        (trap | no-trap);
    }
}

```

FIGURE 15e

```

Connections      connections {
                    interface-switch connection-name {
                        interface interface-name.unit-number;
                        interface interface-name.unit-number;
                    }
                    lsp-switch connection-name {
                        transmit-lsp label-switched-path;
                        receive-lsp label-switched-path;
                    }
                    remote-interface-switch connection-name {
                        interface interface-name.unit-number;
                        transmit-lsp label-switched-path;
                        receive-lsp label-switched-path;
                    }
                } # End of [edit protocols connections] hierarchy level

DVMRP             dvmrp {
                    disable;
                    export [ policy-names ];
                    import [ policy-names ];
                    rib-group group-name;
                    traceoptions {
                        file name <replace> <size size> <files number> <no-stamp>
                          <(world-readable | no-world-readable)>;
                        flag flag <flag-modifier> <disable>;
                    }
                    interface interface-name {
                        disable;
                        hold-time seconds;
                        metric metric;
                    }
                } # End of [edit protocols dvmrp] hierarchy level

IGMP              igmp {
                    traceoptions {
                        file name <replace> <size size> <files number> <no-stamp>
                          <(world-readable | no-world-readable)>;
                        flag flag <flag-modifier> <disable>;
                    }
                    query-interval seconds;
                    query-last-member-interval seconds;
                    query-response-interval seconds;
                    robust-count seconds;
                    interface interface-name {
                        disable;
                        version seconds;
                    }
                } # End of [edit protocols igmp] hierarchy level

IS-IS             isis {
                    disable;
                    authentication-key key;
                    authentication-type authentication;
                    export [ policy-names ];
                    level level-number {
                        authentication-key key;
                        authentication-type authentication;
                        external-preference preference;
                        preference preference;
                        wide-metrics-only;
                    }
                }

```

FIGURE 15d

```

optimize-aggressive;
path path-name {
    disable;
    address <strict | loose>;
}
statistics {
    file filename size size files number <no-stamp>;
    interval seconds;
}
traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
}
traffic-engineering (bgp | bgp-igp);
label-switched-path lsp-path-name {
    disable;
    to address;
    from address;
    adaptive;
    admin-group {
        include [ group-names ];
        exclude [ group-names ];
    }
    bandwidth bps;
    class-of-service class-of-service;
    fast-reroute {
        bandwidth bps;
        hop-limit number;
        include group-names;
        exclude group-names;
    }
    hop-limit number;
    ldp-tunneling;
    metric metric;
    no-cspf;
    no-decrement-ttl;
    optimize-timer seconds;
    preference preference;
    priority setup-priority hold-priority;
    (random | least-fill | most-fill);
    (record | no-record);
    retry-limit number;
    retry-timer seconds;
    standby;
    primary path-name {
        adaptive;
        admin-group {
            include [ group-names ];
            exclude [ group-names ];
        }
        bandwidth bps;
        class-of-service class-of-service;
        hop-limit number;
        no-cspf;
        optimize-timer seconds;
        preference preference;
        priority setup-priority hold-priority;
        (record | no-record);
        standby;
    }
}

```

FIGURE 15f

```

secondary path-name {
    adaptive;
    admin-group {
        include group-names;
        exclude group-names;
    }
    bandwidth bps;
    class-of-service class-of-service;
    hop-limit number;
    no-cspf;
    optimize-timer seconds;
    preference preference;
    priority setup-priority hold-priority;
    (record | no-record);
    standby;
}
install {
    destination-prefix/prefix-length <active>;
}
}
interface (interface-name | all) {
    disable;
    admin-group {
        group-name;
    }
    label-map in-label {
        (nexthop (address | interface-name | address/interface-name)) | (reject | discard);
        (pop | (swap <out-label>));
        class-of-service class-of-service;
        preference preference;
        type type;
    }
}
static-path inet {
    prefix {
        nexthop (address | interface-name | address/interface-name);
        push out-label;
        class-of-service class-of-service;
        preference preference;
    }
}
} # End of [edit protocols mpls] hierarchy level

```

#### MSDP

```

msdp {
    disable;
    export [ policy-names ];
    import [ policy-names ];
    rib-group group-name;
    traceoptions {
        file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
    }
    peer address {
        disable;
        local-address address;
        export [ policy-names ];
        import [ policy-names ];
        traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
            <(world-readable | no-world-readable)>;
        }
    }
}

```

FIGURE 15g



```

        flag flag <flag-modifier> <disable>;
    }
}
group group-name {
    disable;
    export [ policy-names ];
    import [ policy-names ];
    local-address address;
    traceoptions {
        file name <replace> <size size> <files number> <no-stamp>
            <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
    }
    peer address; {
        disable;
        export [ policy-names ];
        import [ policy-names ];
        local-address address;
        mode <(mesh-group | standard)>;
        traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
                <(world-readable | no-world-readable)>;
            flag flag <flag-modifier> <disable>;
        }
    }
}
} #End of [edit protocols msdp] hierarchy level

```

#### OSPF

```

ospf {
    disable;
    export [ policy-names ];
    external-preference preference;
    preference preference;
    reference-bandwidth reference-bandwidth;
    traffic-engineering {
        no-topology;
        shortcuts;
    }
    traceoptions {
        file name <replace> <size size> <files number> <no-stamp>
            <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
    }
    area area-id {
        area-range network/masklen <restrict>;
        authentication-type authentication;
        interface interface-name {
            disable;
            authentication-key key <key-id identifier>;
            dead-interval seconds;
            hello-interval seconds;
            interface-type type;
            metric metric;
            neighbor address <eligible>;
            passive;
            poll-interval seconds;
            priority priority;
            retransmit-interval seconds;
            transit-delay seconds;
            transmit-interval seconds;
        }
    }
}

```

FIGURE 15h

```

nssa {
    area-range network/masklen <restrict>;
    default-metric metric;
    (summaries | no-summaries);
}
stub <default-metric metric> <(summaries | no-summaries)>;
virtual-link neighbor-id router-id transit-area area-id {
    disable;
    authentication-key key <key-id identifier>;
    dead-interval seconds;
    hello-interval seconds;
    retransmit-interval seconds;
    transit-delay seconds;
}
} # End of [edit protocols ospf] hierarchy level

PIM pim {
    disable;
    dense-groups {
        addresses;
    }
    rib-group group-name;
    traceoptions {
        file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
    }
    interface interface-name {
        disable;
        mode (dense | sparse | sparse-dense);
        priority number;
        version version;
    }
    rp {
        local {
            disable;
            address address;
            group-ranges {
                destination-mask;
            }
            hold-time seconds;
            priority number;
        }
        auto-rp (announce | discovery | mapping);
        bootstrap-priority number;
        static {
            address address {
                version version;
                group-ranges {
                    destination-mask;
                }
            }
        }
    }
} # End of [edit protocols pim] hierarchy level

RIP rip {
    traceoptions {
        file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
    }
}

```

FIGURE 15i

```

    flag flag <flag-modifier> <disable>;
  }
  authentication-key password;
  authentication-type type;
  (check-zero | no-check-zero);
  import [policy];
  message-size number;
  metric-in metric;
  receive receive-options;
  send send-options;
  group group-name {
    export [policy];
    metric-out metric;
    preference preference;
    neighbor neighbor-name {
      authentication-key password;
      authentication-type type;
      (check-zero | no-check-zero);
      import [policy];
      message-size number;
      metric-in metric;
      receive receive-options;
      send send-options;
    }
  }
}
} # End of [edit protocols rip] hierarchy level

```

#### Router Discovery

```

router-discovery {
  disable;
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
  interface interface-name {
    min-advertisement-interval seconds;
    max-advertisement-interval seconds;
    lifetime seconds;
  }
  address address {
    (advertise | ignore);
    (broadcast | multicast);
    (priority priority | ineligible);
  }
}
} # End of [edit protocols router-discovery] hierarchy level

```

#### RSVP

```

rsvp {
  disable;
  keep-multiplier number;
  refresh-time seconds;
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
  interface interface-name {
    disable;
    (aggregate | no-aggregate);
    authentication-key key;
    bandwidth bps;
  }
}

```

FIGURE 15j

hello-interval *seconds*;  
subscription *percentage*;  
}  
} # End of [edit protocols rsvp] hierarchy level

**SDP/SAP**      sap {  
                disable;  
                listen <*address*> <port *port*>;  
            }  
            } # End of [edit protocols sap] hierarchy level

**VRRP**          traceoptions {  
                flag *flag*;  
            }  
            } # End of [edit protocols vrrp] hierarchy level  
}  
} # End of [edit protocols] hierarchy level

FIGURE 15k

## **[edit routing-instances] Hierarchy Level**

```
[edit]
routing-instances routing-instance-name {
  interface interface-name;
  protocols {
    ospf {
      ospf-configuration;
    }
  }
}
routing-options {
  aggregate {
    defaults {
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
  }
  autonomous-system autonomous-system <loops number>;
  confederation confederation-autonomous-system members autonomous-system;
  fate-sharing {
    group group-name;
    cost value;
    from address [to address];
  }
  forwarding-table {
    export { policy-names };
  }
}
generate {
  defaults {
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
    (full | brief);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (tag | tag2) string;
  }
}
```

FIGURE 16a

```

interface-routes {
    rib-group routing-table-name;
}
martians {
    destination-prefix match-type <allow>;
}
multicast {
    scope scope-name {
        interface interface-name;
        prefix destination-prefix;
    }
}
options {
    syslog (level level | upto level);
}
rib routing-table {
    aggregate {
        defaults {
            (active | passive);
            as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
                <aggregator as-number in-address>;
            community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
            (full | brief);
            (metric | metric2 | metric3 | metric4) value;
            (preference | preference2 | color | color2) preference;
            (tag | tag2) string;
        }
        route destination-prefix {
            policy policy-name;
            (active | passive);
            as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
                <aggregator as-number in-address>;
            community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
            (full | brief);
            (metric | metric2 | metric3 | metric4) value;
            (preference | preference2 | color | color2) preference;
            (tag | tag2) string;
        }
    }
    generate {
        defaults {
            (active | passive);
            as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
                <aggregator as-number in-address>;
            community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
            (full | brief);
            (metric | metric2 | metric3 | metric4) value;
            (preference | preference2 | color | color2) preference;
            (tag | tag2) string;
        }
    }
    martians {
        destination-prefix match-type <allow>;
    }
}

```

FIGURE 16b

```

static {
  defaults {
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
    (install | no-install);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (readvertise | no-readvertise);
    (no-retain | retain);
    (tag | tag2) string;
  }
  route destination-prefix {
    policy policy-name;
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
    (full | brief);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (tag | tag2) string;
  }
}
rib-groups {
  group-name {
    import-rib [ group-name ];
    export-rib group-name;
  }
}
route-record;
router-id address;
static {
  defaults {
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
    (install | no-install);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (readvertise | no-readvertise);
    (no-retain | retain);
    (tag | tag2) string;
  }
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
}

```

FIGURE 16c

## [edit routing-options] Hierarchy Level

```

routing-options {
  aggregate {
    defaults {
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
    route destination-prefix {
      policy policy-name;
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
  }
  autonomous-system autonomous-system <loops number>;
  confederation confederation-autonomous-system members autonomous-system;
  forwarding-table {
    export [ policy-names ];
  }
  generate {
    defaults {
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
    route destination-prefix {
      policy policy-name;
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
  }
  interface-routes {
    rib-group routing-table-name;
  }
  martians {
    destination-prefix match-type <allow>;
  }
}

```

FIGURE 17a



```

multicast {
  scope scope-name {
    interface interface-name;
    prefix destination-prefix;
  }
}
options {
  syslog (level level | upto level);
}
rib routing-table {
  static {
    defaults {
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
      (install | no-install);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (readvertise | no-readvertise);
      (no-retain | retain);
      (tag | tag2) string;
    }
    route destination-prefix {
      next-hop;
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
      (install | no-install);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (readvertise | no-readvertise);
      (no-retain | retain);
      (tag | tag2) string;
    }
  }
  aggregate {
    defaults {
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
  }
  route destination-prefix {
    policy policy-name;
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
    (full | brief);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (tag | tag2) string;
  }
}

```

FIGURE 17b

```

generate {
  defaults {
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
    (full | brief);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (tag | tag2) string;
  }
  route destination-prefix {
    policy policy-name;
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
    (full | brief);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (tag | tag2) string;
  }
}
martians {
  destination-prefix match-type <allow>;
}
}
rib-groups {
  group-name {
    import-rib [ group-name ];
    export-rib group-name;
  }
}
router-id address;
static {
  defaults {
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
    (install | no-install);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (readvertise | no-readvertise);
    (no-retain | retain);
    (tag | tag2) string;
  }
  route destination-prefix {
    next-hop;
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([ community-ids ] | no-advertise | no-export | no-export-subconfed | none);
    (install | no-install);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (readvertise | no-readvertise);
    (no-retain | retain);
    (tag | tag2) string;
  }
}
}
traceoptions {
  file name <replace> <size size> <files number> <no-stamp>
    <(world-readable | no-world-readable)>;
  flag flag <flag-modifier> <disable>;
}
} # End of [edit routing-options] hierarchy level

```

FIGURE 17c

### ***[edit snmp] Hierarchy Level***

```

snmp {
  description description;
  location location;
  contact contact;
  interface [ interface-names ];
  community community-name {
    authorization authorization;
    clients {
      default restrict;
      address <restrict>;
    }
  }
  trap-group group-name {
    categories category;
    targets {
      address;
    }
    version version;
  }
  traceoptions {
    file <files number> <size size>;
    flag flag <disable>;
  }
} # End of [edit snmp] hierarchy level

```

FIGURE 18

**[edit system] Hierarchy Level**

```

system {
  authentication-order [ authentication-methods ];
  backup-router address <destination destination-address>;
  compress-configuration-files;
  default-address-selection;
  dhcp-relay (server address | disable);
  diag-port-authentication (encrypted-password "password" | plain-text-password);
  domain-name domain-name;
  domain-search [ domain-list ];
  host-name host-name;
  location {
    altitude feet;
    country-code code;
    hcoord horizontal-coordinate;
    lata service-area;
    latitude degrees;
    longitude degrees;
    npa-nxx number;
    postal-code postal-code;
    vcoord vertical-coordinate;
  }
  login {
    message text;
    class class-name {
      allow-commands "regular-expression";
      deny-commands "regular-expression";
      idle-timeout minutes;
      permissions [ permissions ];
    }
    user user-name {
      full-name complete-name;
      uid uid-value;
      class class-name;
      authentication {
        (encrypted-password "password" | plain-text-password);
        ssh-rsa "public-key";
      }
    }
  }
}
name-server {
  address;
}
no-redirects;
ntp {
  authentication-key key-number type type value password;
  boot-server address;
  broadcast <address> <key key-number> <version value> <ttl value>;
  broadcast-client;
  multicast-client <address>;
  peer address <key key-number> <version value> <prefer>;
  server address <key key-number> <version value> <prefer>;
  trusted-key [ key-numbers ];
}
ports {
  auxiliary {
    insecure;
    speed baud-rate;
    type terminal-type;
  }
  console {
    insecure;
    speed baud-rate;
    type terminal-type;
  }
}

```

**FIGURE 19a**

```

    }
}
processes {
    inet-process (enable | disable);
    interface-control (enable | disable);
    mib-process (enable | disable);
    ntp (enable | disable);

    routing (enable | disable);
    snmp (enable | disable);
    watchdog (enable | disable) <timeout seconds>;
}
radius-server server-address {
    port number;
    retry number;
    secret password;
    timeout seconds;
}
root-authentication {
    (encrypted-password "password" | plain-text-password);
    ssh-rsa "public-key";
}
services {
    finger <connection-limit limit> <rate-limit limit>;
    ssh <connection-limit limit> <rate-limit limit>;
    telnet <connection-limit limit> <rate-limit limit>;
}
static-host-mapping {
    host-name {
        inet [ address ];
        sysid system-identifier;
        alias [ alias ];
    }
}
syslog {
    file filename {
        facility level;
        archive {
            files number;
            size size;
            (world-readable | no-world-readable);
        }
    }
    host hostname {
        facility level;
        facility-override facility;
        log-prefix string;
    }
    user (username | *) {
        facility level;
    }
    console {
        facility level;
    }
    archive {
        files number;
        size size;
        (world-readable | no-world-readable);
    }
}
tacplus-server server-address {
    secret password;
    single-connection;
    timeout seconds;
}
time-zone time-zone;
}) # End of [edit system] hierarchy level

```

FIGURE 19b

